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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|--|-------------|----------------------|--------------------------|------------------|
| 09/731,775   | 12/08/2000  | Richard Hellberg     | 003250-235               | 7231             |
| 27045  | 7590        | 03/07/2006           | EXAMINER<br>FILE, ERIN M |                  |
| ERICSSON INC.<br>6300 LEGACY DRIVE<br>M/S EVR C11<br>PLANO, TX 75024 |             |                      | ART UNIT<br>2634         |                  |

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/731,775 | <b>Applicant(s)</b><br>HELLBERG, RICHARD |  |
|                              | <b>Examiner</b><br>Erin M. File      | <b>Art Unit</b><br>2634                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/8/2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/25/2001</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on 06/10/1998. It is noted, however, that applicant has not filed a certified copy of the Swedish application as required by 35 U.S.C. 119(b).

### *Drawings*

2. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

3. The abstract of the disclosure is objected to because of the acronym FFT in lines 7 and 10 should be properly defined as Fast Fourier Transform. Correction is required.

See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities: the reference on page 10 of the specification in lines 9, 10 makes specific reference to embodiments in specific claims. The examiner suggests these references to specific claims be removed. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4, 12, 13, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al (U.S. Patent 5,886,749) in view of Liu et al. (U.S. Patent 5,671,168).

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**Claims 1, 12**, selecting a range of samples (col. 9, lines 63-64) and performing  $n$  Discrete Fourier Transforms (fig. 18, 173). Multiplying said bins with a frequency response (fig. 18, 178, col. 6, lines 11-18), performing an  $N_{\text{IDFT}}$ -point Inverse Discrete Fourier Transform on these  $n$  data points (fig. 18, 179); and a further signal processing including matched channel filters (fig. 18, 180). Williams fails to disclose the selection of fourier transform bins around the center frequency, however, Liu discloses a Fourier transform multiplying the Fourier transformed signals,  $X_i(f)$ , with center frequencies of  $M$  adjacent channel frequency bins (fig. 1, output 2), are multiplied by a weighting coefficient  $w_i(f)$  (fig. 1, 3), and then a inverse Fourier transform is performed on the signal (fig. 1, 5, col. 9, lines 4-18). The center frequency of a signal is the point at which the most data is transmitted, and the area directly around the center frequency would carry the greatest amount of information. Because of this value it would be obvious to one skilled in the art at the time of invention to incorporate Liu's selection of center frequency region of Fourier transformed signals into Williams demodulation technique.

**Claims 2, 13**, performing a  $N_{\text{DFT}}$ -point Fast Fourier Transform (fig. 3, 62) on overlapping blocks of the data stream (col. 3, line 15).

**Claims 4, 15**, the limitation of a frequency response having a limited range, the frequency response multiplication as described in Claim 1 is stated to be used to multiply the received signal to remove echos (col. 6, lines 11-26). In order to remove a part of the frequency channel in the multiplication of the received signal, the

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multiplication by the inverse of the fourier transform to remove signal echoes much by definition be limited in the frequency domain.

**Claim 22**, Williams discloses further signal processing including matched channel filters (fig. 18, 180).

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 1**, includes a recitation in the preamble of a method for extracting a channel (line 2), however, the body of the claim limitations fail to set forth any method steps.

9. Claim 1 recites the limitations "to all channels" in line 4 and "on these n data points" in line 11. There is insufficient antecedent basis for this limitation in the claim.

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10. Claim 10 recites the limitation " sequence  $y(t)$  is also rotated " in line 2. There is insufficient antecedent basis for this limitation in the claim.

11. Claim 23 recites the limitation " the  $n$  data points " in line 17. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 24 recites the limitation " the filter frequency coefficients " in line 11. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 11**, the recitation of line 5, "selects only the bins needed" is unclear. It is not specified in the claim any way in which what bins are needed is determined and is rendered indefinite.

14. Regarding claim 23, the word "means" in line 9 is preceded by the word(s) "a multiplexing" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the

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element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

15. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the following elements: an  $\eta\%$  overlap block generator; a multiplexing means; means for performing an  $N_{\text{FFT}}$ -point Fast Fourier Transform; means for performing selection and extraction of bins around the center frequency of the channel; means for performing an  $N_{\text{IFFT}}$ -point Inverse Fast Fourier Transform on the  $n$  data points;  $\eta\%$  overlap block combiner.

16. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the following elements: a  $\eta\%$  overlap block generator; means for performing a Discrete Fourier Transform; a  $\eta\%$  overlap block combiner.

### ***Claim Objections***



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17. Claims 3, 8, 14, 19, and 23 are objected to because of the following informalities.

Appropriate correction is required.

**Claim 3**, the recitation in line 10, "algorithm *has*", should be changed to "algorithm *further comprising*". Further the limitations of lines 11-15 of

**Claim 8**, the recitation in line 6, "being *form* from" should be changed to "being *formed* from".

**Claim 14**, the recitation in line 23, "said step of performing *am* ...." should be changed to "said step of performing *an* ....", further, the recitation in lines 4 and 14, "algorithm *has*", should be changed to "algorithm *comprising*" or "algorithm *including*".

**Claim 19**, the recitation in line 6, "being *form* from" should be changed to "being *formed* from".

**Claim 22**, refers to "said signal processing block" of Claim 1, however, claim 1 recites "a signal processing step". A processing block refers to hardware, but the listing of possibilities of the processing block includes algorithms, which are software. The examiner further suggests that the recitation of line 2, "a combination" be removed, as

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the claim does not recite how the elements would be combined, and the recitation of *at least* one allows for more than one of the elements to be used.

**Claim 23**, the recitation in line 14, "means for multiplication of said bins" should be replaced with "means for multiplying said bins".

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 9:30-6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin M. File



2/22/2006



JEAN B. CORRIELLUS  
PRIMARY EXAMINER

3-3-06